

Efficient and Equitable Forest Rent Capture in Three Pacific Island Nations: Opportunities and Impediments in Forest Policy Reform

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Various contrasts may be observed in the way three Pacific island countries – Papua New Guinea (PNG), Solomon Islands and Vanuatu – exploit their natural forest endowments. The modes of exploitation, the efficiency of forest revenue systems and the sustainability of forest allocation mechanisms are analysed. It is argued that equity issues are also important in forest policy given that forests in all three countries are under customary tenure. The forest revenue system in PNG is criticised for being inefficient and inequitable. In the Solomons the rate of logging is found to be unsustainable, being linked to the country's economic crisis. In Vanuatu a logging ban has stimulated timber processing, but probably at a cost to the economy, and has failed to confer sustainability on the industry. Changes to forest revenue systems and forest allocation procedures that would enhance efficiency, equity, sustainability and conservation are identified, along with impediments to these changes.

INTRODUCTION

This article discusses arrangements for the maximisation, and the distribution, of resource rents in Papua New Guinea, the Solomon Islands and Vanuatu, each of which possess large forest resources that provide an important source of potentially continuous export income. While in each country the exploitation of the forest is in the hands of private enterprise, governments regulate and tax the private harvesters and in so doing affect the efficiency of harvesting and the distribution of resource rents. Landowners, now more dependent on cash income than hitherto, are eager to receive a share of logging proceeds. The importance of efficiency and distribution issues in forest revenue systems were made explicit by Vincent (1990) and Hyde and Sedjo (1992). Three efficiency criteria are employed in this three island comparison. The first relates to policy that sustains long-term investment by the private sector. The second is the allocation of the forest to uses that will generate the highest social benefit. The third relates to the adoption of sustained yield forest management.

The extraction of forest resources in Papua New Guinea and in the Solomons is mainly by private logging companies, often capitalised through foreign direct investment, that export raw logs, particularly to markets in Asia. Logging concessions are allocated by governments, which attempt to regulate logging practices. The resulting resource rents are distributed between private logging

companies, forest owners and central government. The central government controls the distribution of the rents by imposing log export taxes and by stipulating the shares to landowners. It can be argued that the share of resource rents received by logging companies – that is, what remains after export taxes and landowner payments – should be no more than will induce the companies to maintain their investment and to log at the level set by government. This is particularly the case if logging companies repatriate their profits overseas. Duncan (1994) investigated the distribution of forest rents in Melanesia during a period of high timber prices and concluded that the forest revenue systems (i.e. government systems of charges, taxes and royalties) were inadequate in capturing resource rents for governments. Since then governments have increased the rate of log tax in PNG and the Solomons. In Vanuatu, exports have been confined to processed timber since the imposition of a ban on log exports in 1993.

Customary land tenure is still strong in the three countries and the legitimacy of this traditional ownership is recognised in their national constitutions. It is therefore argued that landowners should receive a share of the resource rent that reflects forest ownership.

Small-scale forestry is practised in all three countries, often by village group enterprises exploiting their own forests under customary tenure for domestic and export markets, and also by independent processors purchasing logs from landowners. Because of the high costs of marketing from remote locations, small-scale operators tend to be concentrated near major towns and ports. In PNG and the Solomons, such operations tend to be located in concessions that have already been logged, with logging roads providing ready access to the resource. The resource in this case is in the form of standing trees ignored by loggers or logs felled but rejected for export. Small-scale processors may also be found in areas that, for various reasons, have not been included in logging concessions or have been left standing by loggers. Little statistical information is available about these groups, who have tended to be ignored by governments, except in Vanuatu.

FOREST INDUSTRIES IN THE ECONOMIES OF THE THREE COUNTRIES

The criteria by which the importance of forestry can be judged include the contribution to Gross National Product (GNP), to export income and to government revenue. Data on forestry in GNP are not available, but on the second two measures the forest industries are highly important to the economies of the Solomons and Vanuatu and relatively less important in PNG. In PNG and the Solomons forestry exports are almost all in the form of raw logs. In the Solomons log exports contributed no less than 64% of total merchandise exports in 2000 (Table 1) and log taxes contributed 15% of total government tax revenue.

In the PNG economy, the importance of log exports declined from 18% of total merchandise exports in 1994 to 7% in 2000. While the absolute value of log export tax receipts in 2000 was similar to that in 1994, in relative terms it has declined to 6% of total tax revenue. This holding up of tax receipts in the face of a log price and production decline is a reflection of the interaction between the progressive log tax schedule denominated in local currency and currency depreciation. In contrast, the

export tax receipts in the Solomons declined markedly over the period (Table 1), even though the value of logs remained relatively constant. This was perhaps due to the granting of increased tax concessions to logging companies on a case-by-case basis by the Solomons government. In contrast to the other two countries, where exports are almost all in the form of natural forest logs, Vanuatu's exports are confined to processed natural forest timber, which contributed 14% of total exports in 2000.

Small-scale harvesting and processing operations, based on portable mills, number in the hundreds in PNG and the Solomons (Foundation of The Peoples of the South Pacific 1995). The small mills contribute to regional economies by providing timber for local construction industries and by exporting sawn hardwoods, particularly to Australia (Hunt 2001b). Their overall importance is difficult to assess, however, given the lack of data on their production and sales.

When undertaking a forestry sector analysis, it is easy to overlook the economic settings that are important to investors in timber industries. Private investment has been virtually non-existent in all sectors of the PNG economy for several years (Manning 1999, Duncan 2001). The causes are largely poor macro-economic management and poor governance, with associated high interest rates and high inflation. These impediments have been reinforced by exchange rate uncertainty and tax and policy uncertainty with respect to forestry. Similar economic difficulties have arisen in the Solomon Islands, where there has been civil unrest and where changes in macroeconomic and exchange rate policy have been frequent.

Value-adding

The importance of forest industries to the economy depends not just on the resource rents received but also on the level of domestically-sourced inputs and employment. Logging for export in PNG and the Solomons is an enclave industry with limited linkages to the rest of the economy.

There are presently about 50 sawmills, 27 furniture factories, a plywood mill, and a woodchip mill in PNG. In addition there are several hundred scattered portable sawmills accessing raw logs relatively cheaply and free of tax. The main processed exports by volume and value are woodchip, lumber and veneer. The prices for lumber exports fall mainly in the range US\$200/m³ to US\$400/m³. The main destinations of processed exports, other than woodchips, are Australia, China and Indonesia (FIA 2001). The area of plantations has changed little since 1996. There are about 40,000 ha in four main plantations of Eucalyptus and Acacia species for woodchips, out of a total of 60,000 ha. Smallholder plantations for balsa wood production are unrecorded but estimated at 400 ha (FIA 2001, p. 12).

A 1997 study demonstrated that timber processing in PNG, even for the domestic market, was uneconomical given the landed prices of timber from Indonesia and Malaysia (Fortech 1997). Veneer, plywood and fibreboard export still generate only marginal returns in PNG due to this low-priced competition. In the case of medium and large mills producing sawn timber, the opportunity cost is principally the foregone log export tax, the value of which exceeds the benefits of processing (Government of Papua New Guinea 2001). Company tax incentives and tariffs that operate to encourage processing exacerbate these opportunity costs. In contrast, small scale sawmilling does not incur this opportunity cost, because it uses logs that

Table 1. Forest industries in the economy, PNG and Solomons, 1994-2000

Log value export and tax by country	Calendar year						
	1994	1995	1996	1997	1998	1999	2000
<u>PNG:</u>							
Log export value (Kina M)	483	437	453	496	218	386	384
Total merchandise exports (Kina M)	2,662	3,400	3,314	3,059	3,688	4,983	5,793
Log exports as % of total merchandise exports	18	13	14	16	6	8	7
Duty or export tax, (Kina M)	137	133	145	154	47	101	136
Total taxes (Kina M)	1,124	1,208	1,526	1,680	1,598	1,921	2,315
Log tax as % of total taxes	12	11	10	9	3	5	6
<u>Solomon Islands:</u>							
Log export value (SI\$ million)	277	301	367	309	196	251	224
Total merchandise exports (SI\$ million)	468	573	577	582	683	725	353
Log exports as % of total merchandise exports	59	52	64	53	29	35	64
Duty or export tax (SI\$ million)	67	63	69	51	31	46	38
Total taxes (SI\$ million)	241	271	290	286	316	365	260
Log tax as % of total taxes	28	23	24	18	10	12	15

Sources: Bank of Papua New Guinea (various), Central Bank of Solomon Islands (various), SGS (various).

would not be exported. However, a reduction in the high rate of log tax at current low log prices would confer economic viability on large and medium sawmills and some processing by reducing opportunity costs.

The value of processed exports of timber from PNG and the Solomons is reported in Table 2. In the Solomons, processed exports are also at a low level compared with the value of raw log exports. The recent political turbulence resulted in all major foreign direct investors, except the regionally based logging companies, abandoning the country. The subsequent economic collapse and the lingering political instability make it even less likely than in the past that investors will be attracted to timber processing for export. The contraction in the economy has led to an unfavourable short and medium term outlook for timber processing even in the small domestic market.

Table 2. Processed timber exports PNG and Solomons as percentage of forest exports

Processed exports	Calendar year						
	1994	1995	1996	1997	1998	1999	2000
PNG (Kina M)	11.3	13	11.5	24.3	19	10.3	25.3
As % of total forest exports	2.3	3.5	2.2	4.9	8.7	2.6	6.6
Solomon Islands (SI\$ million)	12.4	12.4	12	9.5	n.a.	n.a.	n.a.
As % of total forest exports	4.5	4.1	3.1	3.3	n.a.	n.a.	n.a.

Sources: Bank of Papua New Guinea (various), Bouro (2001).

Vanuatu's case contrasts with the other two island nations because its ban on the export of raw logs, effective since 1993, means that all timber exports are in processed form. Table 3 shows that volume and value of exports has increased substantially since the mid-1990s.

The attraction of domestic processing over the export of the raw product is the increased economic activity associated with adding value to the product. In the case of timber processing, the economic activity involves investment in land, buildings, machinery and vehicles, the purchase of local goods and services and fuel and, importantly, the employment of local labour. The increase in investment and employment has been achieved in Vanuatu through a ban on logging (which effectively subsidises timber processing by reducing the value of logs), and at the same time by the imposition of only a modest export duty of 6% on the value of processed timber exported.¹ In addition to the total royalties paid to Vanuatu landowners of US\$280,000, forestry worker wages amounted to about US\$1 M,

¹ At the same time, the policy goes so far as to abolish income taxes, corporate taxes, capital gains taxes and withholding taxes. Moreover, projects are exempt from customs duties if they contribute to employment or generate foreign exchange. In concert with these policies to encourage investment is a removal of both foreign exchange controls and limits to foreign ownership of Vanuatu businesses (Government of Vanuatu 2001).

excluding the earnings of several hundred workers involved part time with portable sawmills (Government of Vanuatu 2000, p. 5). The opportunity cost of generating the domestic activity associated with the logging ban is the value of raw log exports foregone. At current log prices the export of raw logs would not return a great deal less than processed exports, and could be achieved at a much lower cost. It would be instructive to measure more accurately the economic benefits of Vanuatu's log export ban, taking account not only of the foregone benefit of an efficient level of export log tax but also the rate of repatriation of profits by logging companies.

Table 3. Processed timber exports, Vanuatu

Production, and export	Calendar year						
	1994	1995	1996	1997	1998	1999	2000
Log production, plantations (m ³)	0	0	0	0	0	0	0
Log production, natural forests (m ³)	n.a.	n.a.	n.a.	n.a.	n.a.	35,143	39,860
Processed timber exports (m ³)	5,107	4,160	7,940	14,938	12,917	12,219	8,599
Processed exports value, million (Vt)	255	234	362	515	524	537	434
Processed exports price (Vt/m ³)	50,016	56,233	45,592	34,468	40,579	43,940	50,497

Note: Year 2000 exports are under-reported (Gerrand 2001).

Source: Vanuatu Department of Forests (2000).

ANALYSIS OF RESOURCE RENT DISTRIBUTION

Tables 4 and 5 indicate the distribution of resource rents over time in PNG and the Solomons respectively. Resource rent is defined as f.o.b. price, less operating cost of logging, i.e. no normal profit margin has been included in costs.²

The sharp increase in the PNG government's share of resource rents in year 2000 and 2001 has two causes. First, the government's mini budget of August 1999 reintroduced the harsher tax schedule that it had suspended in 1998³, and second, the average kina price of export logs rose due to depreciation of the kina against the US dollar. Given that the export tax is progressive, a greater share of the higher price was captured in tax. In 2001, 81% of the resource rent available from logging was captured by the PNG government. Table 4 shows that the log tax and landowner benefit together amount to K152 M, while the rent available is only K145 M, the difference being loss incurred by loggers. While the landowner share of resource

² Hunt (2002a) suggested that a normal profit of 20% of total costs, plus a share of super profits, be incorporated in the design of a forest revenue system in PNG.

³ The 1995 tax schedule was introduced after Duncan (1994) had pointed to the fact that a large proportion of resource rent was being appropriated by logging companies during the high price years of 1992 and 1993.

Table 4. Shares of forest resource rents in PNG

Production, export and rent shares	Calendar year							
	1994	1995	1996	1997	1998	1999	2000	2001
1. Log production, plantations (m ³)	0	0	0	0	0	0	0	0
2. Log production, natural forests (m ³)	2.94	2.51	2.61	3.01	1.61	1.98	1.99	1.91
3. Log production total (m ³)	2.94	2.51	2.61	3.01	1.61	1.98	1.99	1.91
4. Log export value (Kina M)	483	437	453	496	218	386	384	346
5. Log export price, (Kina /m ³) (row 4/row 3)	164	174	174	165	135	194	193	181
6. Duty or export tax (Kina M)	137	133	145	154	47	101	136	118
7. Landowner benefit (Kina M)	41	35	43	54	24	36	36	34
8. Logging costs (Kina /m ³)	50	58	66	74	82	89	97	105
9. Resource rent total (Kina M) (row 4-row 8)	336	291	281	274	86	208	190	145
10. Govt. share of rent (%) (row 6/row 9*100)	41	46	52	56	55	48	72	81
11. Landowner share of rent (%) (row 7/row 9*100)	12	12	15	20	28	17	19	23
12. Loggers' share of rent (%) ((row 9-row 6-row 7)/row 9*100)	47	42	33	24	17	34	9	-5

Sources: SGS (various), Duncan (1994), Hunt (2002).

Table 5. Solomon Islands: shares of resource rent

Production, export and rent shares	Calendar year							
	1994	1995	1996	1997	1998	1999	2000	2001
1. Log production, plantations (m ³)	0.079	0.090	0.100	0.083	0.072	0.075	0.064	0.078
2. Log production, natural forests (m ³)	0.580	0.659	0.733	0.607	0.532	0.547	0.472	0.5
3. Log production total (m ³)	0.659	0.749	0.833	0.69	0.604	0.622	0.536	0.65
4. Log export value (SI\$M)	277	301	367	309	196	251	224	245
5. Log export price (SI\$/m ³) (row 4/row 3)	420	402	440	448	325	403	419	377
6. Duty or export tax (SI\$M)	67	63	69	51	31	46	38	41
7. High landowner royalty (SI\$M)	80	80	80	80	80	80	80	80
8. Low landowner royalty (SI\$M)	30	30	30	30	30	30	30	30
9. High landowner in kind (SI\$M)	40	40	40	40	40	40	40	40
10. Low landowner in kind (SI\$M)	6	6	6	6	6	6	6	6
11. High landowner benefit total (SI\$M)	120	120	120	120	120	120	120	120
12. Low landowner benefit total (SI\$M)	36	36	36	36	36	36	36	36
13. Logging costs (SI\$/m ³)	150	156	162	168	173	179	185	191
14. Resource rent total (SI\$M) (row 4-(row 13*row 3))	178	184	232	194	92	139	125	121
15. Govt. share of rent (%) (row 6/row 14*100)	38	34	30	26	34	33	30	34
16. High landowners' share of rent (%) (row 11/row 14*100)	67	65	52	62	131	86	96	99
17. Low landowners' share of rent (%) (row 12/row 14*100)	20	20	16	19	39	26	29	30
18. High loggers' share of rent (%) ((row 14-row 16-row 6)/row 14*100)	42	46	55	55	27	41	41	36
19. Low loggers' share of rent (%) ((row 14-row 17-row 6)/row 14*100)	-5	1	19	12	-65	-19	-26	-34

Sources: Central Bank of Solomon Islands (various), Bouro (2001).

rent is estimated to have increased to 23% in 2001 – almost double that of the mid 1990s – it is nevertheless less than a third of the government's share.

In PNG, to regularise the payment of landowner benefits all new timber permits since July 1966 have stipulated a level of Producer Development Benefit (PDL), based on log export price, in addition to a fixed (per cubic metre) landowner royalty. In effecting this change with respect to existing permits any in-kind and financial benefits paid to landowners were required to amount to the value of the PDL. Any premiums negotiated directly between landowners and timber companies in addition to this PDL have not been included in the calculation of landowner benefits in Table 4.

An efficient tax system is one that maximises and sustains rents and to do this it must allow sufficient profits to be made by the private loggers to maintain investment. The evidence from Table 4 is that logging companies in PNG are on average having difficulty in making profits, suggesting that there will be an accelerating disinvestment in export logging.

The government's share of forest resource rent in the Solomon Islands has remained relatively constant (Table 5). However, landowners receive a highly variable share of rents, compared with PNG, depending on various royalty and in-kind benefits negotiated. It is likely that the rent share of landowners accords with the 'low' estimates of Table 5 and that the loggers' share accords with the 'high' estimates because loggers are unlikely to agree to levels of royalties and benefits that leave them with negative shares. It is suggested therefore that the rent is presently distributed relatively uniformly among Solomon Island stakeholder groups, each receiving about a third.

Transfer pricing and rent distribution

It was shown that the forest revenue system of PNG appropriates a large proportion of the resource rents available, thus tending to deter investment by the private sector, stifling production and reducing the total of resource rents. An additional factor diminishing the rents received by all stakeholders is transfer pricing by which foreign wholesalers appear to gain a share of resource rents. Wholesalers do this by paying a price lower than market price to the log exporter, which allows them to make an extra margin of profit when realising the full wholesale price of logs in overseas markets. The actual prices paid to logging companies in PNG by foreign traders are documented by the authorities and form the basis for the payment of log tax. Even after allowing for costs of insurance and freight and any quality differential that might exist between PNG logs and wholesale prices quoted, the log prices paid to logging companies are lower than those quoted for wholesale markets in Japan. In 1999, 1M m³ of logs, or half of PNG's production, was exported to Japan. It is estimated (Hunt, 2002) that in PNG in 1999 resource rent leakage due to transfer pricing – borne by landowners loggers and government – totalled between K26 M and K52 M (Table 6). If it occurred, the 'kickback' of a proportion of the benefits of transfer pricing received by wholesalers to logging companies would reduce the estimated income loss by loggers.

Transfer pricing also seems to affect log prices in the Solomons. The value of logs destined for Korea and China was estimated by the Ministry of Forests, Environment and Conservation (2001) to average about US\$17.08/m³ or SI\$85/m³ less than suggested by market price information. The implication is that about 13%

of resource rents in these two markets, which make up about a third of the Solomons' total market, was being transferred offshore to log buyers. The difficulties of investigating transfer pricing are exacerbated by the dense and complicated nature of timber wholesaling in Japan.

Table 6. Estimated losses of rents due to transfer pricing in PNG in 1999

Loss by stakeholder	Kina (M)
Revenue loss to government	18 – 37
Producer benefit loss to landowners	2 – 4
Income loss to loggers	6 – 11
Total loss	26 – 52

Source: Hunt (2002).

Distribution of benefits to resource owners

One measure by which to compare benefits received by the resource owners in the three countries is the income they received per cubic metre of log harvested. In Vanuatu's case only processed timber has been exported since 1993, the price of exported processed timber averaging US\$308 in year 2000. As expected, the value-added component of exported processed timber is captured by the processor, lowering the relative shares received by government and landowners. Eighty eight percent of the value of processed timber exports in 1999, of Vt537 M, was captured by processors (Vanuatu Department of Forests 2000).

Comparing landowner benefits in the three countries in Table 7 reveals that benefits ranging between US\$6 for PNG and US\$24 for the Solomons. As a percentage of log price, landowner benefits were 8% in PNG, 9% in Vanuatu and up to 29% in the Solomons. If the lower estimates are taken for the Solomon Islands then the percentages differ little from those found to be applying in 1992 and 1993 by Duncan (1994).

Table 7. Summary of estimated landowner benefits, PNG, Solomons and Vanuatu, 2000

Landowner benefit	Country		
	PNG	Solomons	Vanuatu
Log volume, M m ³	1.992	0.472	0.035
Landowner benefit local currency (lc),M	36	36-120	33
Exchange rate, US\$/lc	0.33	0.196	0.007
Landowner benefit US\$/m ³	6	7-24	6.6
Average log export price US\$/m ³	72.1	81.78	76.9
Landowner benefit as % of log export price	8	9-29	9

Note: The average log export price in the case of Vanuatu is imputed.

Sources: SGS (various), Central Bank of Solomon Islands (various), Bouro (2001) and Vanuatu Department of Forests (2000).

FOREST POLICY ANALYSIS

Efficiency issues

On the evidence in Table 4, log companies in PNG have continued to produce by deferring capital costs. It is inevitable that disinvestment will eventually take place if the industry cannot cover its full costs. The introduction of a resource rent based tax (instead of one based on log price) would avoid the risk of over-taxing the industry (see Hunt, 2002). Moreover, a lower tax rate may well achieve a higher level of revenue – lower taxation equates to a higher price for logs. It has been suggested (Hunt, 2000) that tax revenue is elastic with respect to price, i.e. the reduction in revenue from a reduction in tax rate would be more than compensated by the increased tax take on a higher volume of production. To achieve higher production, however, new concessions will need to be opened up.

Allocation of forest resources

The rate and manner of allocation of forest resources for exploitation are in the purview of Governments. In PNG many of the concessions awarded a decade or more ago are now nearing the end of their economic life. It is planned to allocate new concessions under Forest Management Agreements (FMAs). These concessions cover 11M ha of the estimated available commercial forest of 22 M ha. Within the FMAs there are ostensibly sufficient timber resources to be able to implement sustained yield management, with one thirty-fifth of the concessions being logged each year. (Even if the 35-year cutting cycle were adhered to in PNG there are doubts whether the forest will recover in that period.)

An official review of the FMA process found that forest volume inventories, which are the basis on which the FMAs are to be sustainably exploited, were in many cases overestimated (Everts 2001). Moreover, a recent review of forest resources available suggests that only 6.7M ha of the allocated 11M ha is commercial forest (Shearman and Cannon 2002, Figure 4). Consequently, logging companies will need to operate on a shorter cycle than 35 years (in some case much shorter) to achieve the throughput of logs they need to attain financial viability. This shortcoming in providing the inputs to basic forest management raises questions about the government's ability to make the long-term commitment required to implement sustained yield management.

The economic value of forests may have been higher in some other use, such as small-scale forestry or conservation, but these options are never tested by the PNG Forest Authority before it bundles the resource. It is questionable whether the government should to be the agent for the appropriation of customary landowners' forest resources for logging, while at the same time determining that landowners will receive only 23% of rents. Moreover, there is a conflict of interest in the government's desire to maximise resource rents and in its responsibility to conserve areas of forest of high biological value. It is therefore proposed that the government vacate its pro-active role and allow the forest owners to negotiate with parties who wish to exploit or conserve their forest resources (Stocker 2002). The role of the PNG Forest Authority would then be confined to regulation, ensuring the implementation of forest management plans and fair dealing by the parties. The benefits received directly by landowners would accord with negotiated agreements

reached (with loggers or conservation organizations), while resource taxes would be extracted on export, as they are presently.

Policy and sustainability

In the Solomons, the policy chosen for the maximisation of revenues from forestry is the maximisation of the volume of log exports, rather than higher rates of log export tax. The logging industry is the only major exporter to survive the economic collapse of 2000-2001. Exports were only mildly depressed in 2000, because of the reluctance of log ships to call into the Solomons during the hiatus. However, with that restraint removed, and with government encouragement, it is likely that exports have grown. The share of the rent captured by the loggers, about 40% (Table 5), together with the freedom to repatriate capital, appear sufficient for them to respond to the government's urging. Log volumes have been in excess of sustainable yield, resulting in a depleted inventory. According to Sheehan (2000, p. 126), the sustainable harvest rate is 250,000 m³ per year. In contrast, the current rate is about 500,000 m³ a year. Bouro (2001) suggested to the author that there was some 3.5 M m³ of timber left unharvested, while an AusAID forester based in the Solomons (Raymond 2001) suggested that there was about 4.0 M m³ of timber available. At present harvest rates the resource will last only seven or eight years on these estimates. However, the government's view is obviously that the financial flows from logging are much more useful now, in its time of crisis, than in the future. It is hoped by the government that plantation forestry will be able to fill the export gap left by exhausted natural forests. Presently plantations generate only about 15% of total log exports, but attracting the necessary amounts of private investment needed to expand plantation production six-fold would seem to be out of the question in the present socio-economic climate.

National estimates of sustainable yields from logging are in theory vital to the achievement of sustained yield management. However, national estimates are dangerously misleading in Pacific islands. This is because it is usual for logging to be concentrated in particular islands or provinces. In the case of Vanuatu, the spatial unevenness of logging is well illustrated. While the total annual log output of around 40,000 m³ of log is well within the national estimated sustainable yield of 68,000 m³, the year 2000 harvest on six of the 10 islands of the country exceeded sustainable volumes. Another sustainability issue highlighted in Vanuatu is selective logging by species. On the island of Santo, the focus of the industry, 97% of the timber harvest in 2000 came from just two favoured species. Such selective harvesting is a problem mainly associated with fixed mills producing for export, rather than with portable mills that tend to cut a range of species for both local and export markets (Vanuatu Department of Forests 2000, pp. 5-6). The codes that govern logging companies in PNG and the Solomons specify that all species over a specific diameter must be taken.

Policy for small-scale forestry

In PNG and the Solomons there are very many portable milling operations. This option is not usually adopted as an alternative to industrial logging but is usually exercised in areas that have been already logged or that are non-commercial due to slope or other physical factors. Therefore it does not usually incur an opportunity cost to the government. Small-scale forestry, that is ecologically sustainable, or

‘eco-forestry,’ is practised in all three countries by a relatively small number of organised landowner groups (Hunt 2002b). The costs of formation of the groups and of certification have meant that they are viable only with heavy subsidisation. The attractiveness to donors to the programme is the conservation of forest and the transfer of skills to the groups. There are moves afoot to reduce the cost of group certification to facilitate access to niche markets for certified timber in Australia, Europe and the USA.

The making of recommendations for more regulation and better enforcement to ensure sustainable practices in small-scale forestry are often unrealistic in PNG and the Solomons given the weakness of their governments. However, a licence fee for portable mills would offset some of the cost of administration. The expanded training and extension functions of the forest services could well be outsourced to independent companies along with other forestry services concerned with compliance and enforcement.

Forest conservation policy

The lack of designated forest conservation areas in both PNG and the Solomon Islands reflects a government bias towards industrial harvesting, but also the difficulty of establishing conservation areas where customary tenure prevails.⁴ The lack of awareness on the part of conservation non-government organizations (NGOs) that they need to compete financially for forest resources with governments has also restricted the establishment of conservation areas. Policy change in this area will be difficult given that governments are concerned with maximising their revenues rather than social benefits. Nevertheless, acquisition of forest through long-term leases from customary owners needs to be pursued vigorously before all areas of high conservation value are logged or converted to other uses.

CONCLUSIONS

Efficiency and sustainable management criteria may be applied to the organisation of forest industries. Achievement of maximum social benefit is compromised in PNG and the Solomons by the allocation of forest concessions by governments without consideration of the alternatives to industrial logging. Donors and NGOs need to be able to compete for areas of high conservation value. Nor is the alternative of small-scale forestry using portable sawmills promulgated by the governments when negotiating with landowners to form logging concessions because it would lead to fragmentation of the concessions. There would be an economic cost to government, in the form of log export tax foregone, in promoting alternative uses in areas that would be logged. However, it was demonstrated that in the case of PNG the rate of tax is inefficiently high, and lowering of the log export tax would also lower the opportunity cost of small-scale forestry.

In the Solomons, the government is focused on managing industrial forestry to maximize short-term revenue flow rather than for sustained yield. In PNG the heat has tended to go out of the debate about sustained yield management because

⁴ Included in forest conservation is the practice of sustainable forest management that attempts to maintain the non-monetary values of the forest.

logging volumes have been declining under a heavy log export tax. The new Forest Management Agreement Areas (FMAs) are designed to generate sustained yields but in practice the government failed to undertake proper resource inventories that would make this possible. It remains to be seen whether the political and financial inputs will be sufficient to revive the objectives implicit in the FMAs. Also, there is no guarantee that logged forests will recover sufficiently for a viable second cut or that the forest will not be converted to some other use such as agriculture. The difficulty of implementing sustained yield management was reinforced by the case of Vanuatu where even with a logging ban there is overexploitation.

The importance of the forest revenue system in maximising a sustainable flow of resource rents was illustrated in the case of PNG. The government's log export tax, by absorbing most resource rents, has already reduced production and stifled investment. The replacement of the log tax based on price with one based on resource rent would avoid this situation. Transfer pricing appears to be costly to log exporting countries. However, addressing the issue is extremely difficult given the impenetrable nature of wholesale markets in Japan.

There is a strong case that customary forest owners should receive a greater share of resource rents. Governments have the power to restructure forest revenues system to achieve greater equity. However, such a change is unlikely in the short run in PNG or the Solomons given that greater equity would be achieved at the expense of governments' share of resource rent.

Vanuatu provided a contrast to the other two countries by almost eschewing taxes and stimulating investment and employment, thus almost all resource rents are captured by the private timber processors. It would be instructive to analyse further the benefits and costs of this radical forest policy.

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